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Georgetown U. and Italy's Fidia

Academic-Industrial Link Hit by Financial Crisis

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The Fidia-Georgetown Institute for the Neurosciences, one of the first in the new-style wave of industry-financed laboratories on university campuses, has heavily reduced its activities and staff following the collapse of its Italian parent, the Fidia pharmaceutical corporation, in the anti-corruption turmoil sweeping Italy.

Meanwhile, Georgetown University, homebase of the Institute, has filed suit against the Fidia corporation after the firm said it would renege on an agreement to provide $30 million for a research building now under construction on the Georgetown campus, in Washington, DC.

"We continue to work," Erminio Costa, Director of the Institute since its founding in 1985, told SGR on July 21. But he reported a 50 percent cut in funding from the Institute's virtually sole source of support, the Fidia Research Foundation, a Washington-based creation of the parent Italian firm. Costa said that, at its peak, the Institute employed a core

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group of about nine researchers, plus postdocs, graduate students, and clerical staff, for a total of about 65. "Fidia," he said, "told me to arrange the budget for an emergency. We are running with austerity."

The most recently available federal tax records for Fidia's American operations state that the Foundation spent $8.8 million in 1991, and that in 1992, the Fidia-Georgetown Institute received $4.1 million from the Foundation and $402,860 in grants from the National Institutes of Health. Except for that sum from NIH, all the money for the Institute came from the Italian pharmaceutical firm, via the Fidia Foundation under a 20-year agreement with Georgetown. Under the agreement, the Foundation was to provide "up to $3 million a year (adjusted annually for inflation) to operating costs," plus construction costs for lab facilities.

Fidia's American ventures have been of more than routine interest to observers of scientific mores because of its quick ascent to prestige via lavish spending here, despite a dubious reputation abroad. According to the Italian newspaper *Corriere della Sera*, "There are many suspicions surrounding the company.... It is not clear who owns it.... This leaves room for the wildest rumors"—including, of course, the Mafia and corrupt politicians.

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Declining Funds, Sinking Spirits

A New, Deeper Pessimism Sweeps Over Science

SGR detects a new pessimism in science that merits special note. True, ever since it signed on with the US government after World War II, the scientific community has emitted woeful pronouncements about inadequate support and the dark consequences that threaten the nation if science budgets do not leap ahead.

However, while gloomy and heartfelt, this rhetoric possessed a seasonal quality, focusing on this or that allegedly shortsighted action of Congress or misguided step by the White House in a particular budget cycle. Despite the complaining, the science-government linkup was generally regarded as basically solid and destined for expansion, *a la* Vannevar Bush's revered blueprint for postwar support of

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In Brief

The Congressional Budget Office (CBO) has scrutinized the often-cited 28-percent return on federal investment in academic science—a figure calculated by Edwin Mansfield, Professor of Economics, University of Pennsylvania. It may not be off the mark, CBO says, but "statistically speaking, one can have little confidence that the actual rate of return from academic research is very close to Mansfield's estimate." The CBO paper, *A Review of Edwin Mansfield's Estimate*, is available at no charge from: CBO, Publications, 2d and D Sts. SW, Wash., DC 20515; tel. 202/226-2809; fax 202/226-2714.

The intent to nominate Neal Lane, Provost of Rice University, for NSF Director was announced July 13 by the White House. But the paperwork drag has affected this one, too. As of July 27, the nomination had not been received by the Senate, scheduled to recess August 8 for a month. Lane, meanwhile, has signed on as a consultant and has been meeting with NSF staff—but strict rules bar him from any policy actions until he's confirmed.

Supersonic transport plans are stirring again, for the first time since Congress killed Nixon's SST program. NASA, emphasizing its long-neglected aeronautical responsibilities, has awarded $75 million in contracts for R&D on high-temperature materials by Boeing, Lockheed, and McDonnell Douglas.

Continuing his long, and so far futile, campaign against academic pork-barrel appropriations, Chairman George Brown of the House Science, Space, and Technology Committee has collected reports from 50 university pork recipients on what they did with the money. The findings are scheduled for release at a hearing August 3.

. . . Fidia's Big Selling Drug in Italy Aroused Skepticism

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In its eight years on the American scene, the Fidia Foundation has co-sponsored scientific meetings with NIH, established a prize in neurology awarded by the National Academy of Sciences, and conducted sessions at the annual meeting of the Society for Neuroscience and in collaboration with the former Soviet Academy of Sciences.

In addition, the Foundation established a Neuroscience Award Lecture Series, organized numerous symposia, and over the past four years has mailed out gratis to neurologists and researchers worldwide 6000 copies of a weekly newsletter, *Neuroscience Facts*—now suspended, because of the financial difficulties. During this same period, researchers associated with the Fidia-Georgetown Institute for the Neurosciences compiled an admirable record of publications in leading journals, including *Proceedings of the National Academy of Sciences*, *Brain Research*, *The Lancet*, *Science*, and the *Journal of Biological Chemistry*—for a total of 205 papers between 1985 and 1992.

Director Costa has been a member of the National Academy of Sciences since 1982, and came to the Fidia Institute directly from the National Institute of Mental Health, where he was founder and longtime chief of the Laboratory of Preclinical Pharmacology. As head of the Fidia Institute, Costa was paid $265,152, plus $24,918 in benefits, in 1992, according to tax records.

The Fidia pharmaceutical firm, once one of the most prosperous and fastest-growing in Italy, went into receivership July 1, following a series of setbacks for its principal product, a preparation from cow brains called Cronassial. According to reports in the Italian press, the product once ranked as the fourth biggest seller on the Italian pharmaceutical market and accounted for 85 percent of Fidia's sales.

Unavailable on the American market, since Fidia never sought approval for US sales, Cronassial is the object of some skepticism in medical and scientific circles. One senior Italian scientist described it to SGR as "a mixture of various brain gangliosides" indiscriminately prescribed for a wide range of ailments, with the Italian National Health Service picking up the bill. Whatever its therapeutic value, the drug did not suffer in the marketplace from its association with the scientific respectability cultivated by Fidia.

Starting out as a small cosmetics house, Fidia, though lacking a reputable product, made its mark on the Italian pharmaceutical scene by investing heavily in research, prestigious scientific connections, and political relationships. In 1975, when Cronassial came on the market, Fidia was spending nearly a quarter of its sales on research, far ahead of the industry standard. It had also developed a close relationship with one of Italy's outstanding researchers, Rita Levi-Montalcini, who shared the 1986 Nobel Prize in Medicine or Physiology. Against a backdrop of solid scientific respectability, strong marketing made Cronassial a best seller.

In 1989, paralyzing Guillain-Barre syndrome was reported in six German patients taking Fidia gangliosides. German health authorities banned the Fidia products, but the episode had no effect on sales in Italy, where Fidia enjoyed close relations with public health authorities. The firm's sales also survived similar reports from other countries. But the reports accumulated, and coincided with managerial upheavals at the company, with the guiding light of Fidia's phenomenal growth, Francesco della Valle, on the outs since 1991 and organizing a competing company.

In March, the Italian counterpart of NIH reported studies showing a marked incidence of Guillain-Barre syndrome among users of gangliosides, and suspended sales of six products, four produced by Fidia. Shortly afterwards, the suspensions were lifted, but sales took a nosedive and have not recovered. While Fidia reported major losses in its most recent fiscal year, outside auditors said they could not vouch for the accuracy of the company's financial statements.

Meanwhile, Italy's raging anti-corruption campaign is delving into the long and close relationship between Fidia and the politicians and health authorities who approved its products and authorized payments through the National Health Service. According to reports in the Italian press, half of Fidia's 1200 employes have been laid off, and efforts are under way to find new investors or to sell the company.

The suit filed by Georgetown University, in US District Court in Washington on June 23, reflects the shock waves generated by these faraway events. The suit states that on April 24, representatives of the Fidia Foundation and the Fidia corporation advised university officials that they would not fulfill their financial commitments for a 180,000-square-foot research building scheduled for completion on the campus in November 1994. The Institute, now housed on three floors of the Medical-Dental Building at the university, was planning to occupy close to half of the building, according to Institute Director Costa.

The suit states, "Under the agreement, Georgetown must complete construction of the New Research Building and remains responsible for the daily operations of the Institute. FIDIA ITALY [as the suit refers to the corporation], as guarantor, remains liable for over $30 million in payments

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. . . Forecasts of Sharp Drops in R&D Spending, Jobs

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research, *Science, the Endless Frontier*. And expand it did, with basic research spending, from all sources, rising in the early postwar years and soaring by a real 80 percent between 1975 and 1989, according to NSF's *National Patterns of R&D Resources: 1989*. From 1980 to 1989, the federal portion, in current dollars, rose from $4.6 billion to $10.2 billion.

After that, the pace of increase declined and so did the morale of the scientific establishment. Over the past year or so, a new element has entered the science-government dialog: a deep pessimism arising from the conviction that the relationship and its growth potential have been profoundly diminished by the geopolitical and economic upheavals of recent years.

In this view, the Cold War was the principal underpinning of federal support for research, even in fields distant from direct military application, such as the basic biomedical sciences. But with the Soviet Union gone, the assessment continues, and no menace to take its place, the impetus for expanding the support of science is also gone—as evidenced by essentially standstill federal R&D spending in recent years.

Meanwhile, industry, racked by competitive pressures and declining military procurement, has followed the familiar short-term course of protecting profits by cutting research. The consequences, according to the evangelists of the new pessimism, are not merely a bad season or two for research and development. Rather, they contend, a global change has enveloped R&D, and the course from now on is bound to be downward in spending, jobs, and research opportunities. The gloom was palpable even before the Clinton Administration arrived with its emphasis on technology and little to say about basic research. Since Inauguration Day, and the first Clinton budget, it has thickened.

The first conspicuous note of the new pessimism was sounded last fall by one of the most seasoned observers of the national scientific enterprise, Edward E. David Jr., a senior researcher and executive at Bell Labs in its heyday, later miscast as Science Advisor to President Richard Nixon, and subsequently President of Gould Labs and Exxon Research and Engineering.

Now a consultant in private practice, David stunned an audience of Washington sci-tech *apparatchiks* last October when he used the occasion of what was expected to be a lighthearted ceremonial talk to sketch his dismal vision of impending changes in the support and scale of science and technology [SGR, October 15, 1992: "Science Faces Gloomy Times, A Veteran Insider Warns"].

David predicted that the "total national investment in R&D will shrink by 25 to 30 percent over the next 10 years." The change will occur, he said, because of the decline of manufacturing, which is the homebase for a great deal of R&D. Central corporate labs are disappearing, while the rising service industries perform little research. Noting that the national laboratories have found no substitute for their former Cold War mission, he predicted that they will decline by some 30 percent.

David also forecast that there "will an increasing oversupply of scientists and engineers in the US resulting in downsizing of academic departments and schools." He added, "Downsizings and layoffs are likely to continue."

A remarkably similar vision was spelled out in an article in the recent spring issue of the *American Scholar*, by David Goodstein, Vice Provost and Professor of Physics and Applied Physics at Caltech. Goodstein addressed the paradox of mass scientific ignorance in the world's leading scientific nation. But along the way, he replayed several of David's basic themes:

"With the Cold War over," Goodstein wrote, "competition in science can no longer be sold as a matter of national survival. There are those who argue that research is essential for our economic future, but the managers of the economy know better. The great corporations have decided that central research laboratories were not such a good idea after all.

"Many of the national laboratories have lost their missions, and have not found new ones," he observed, adding that "The economy has gradually been transformed from manufacturing to service, and service industries such as banking and insurance don't support much scientific research. Although each of these conditions appears to be transient and temporary, they are really the immediate symptoms of a large-scale historic transformation.

"For us in the United States, the expansionary era of science has come to an end. The future of American science will be very different from the past," Goodstein concluded.

Evidence of and responses to the new pessimism can be seen in various sectors of the scientific community, from the elite halls of the National Academy of Sciences to the ranks of the migratory workers of modern research, the hapless platoons of postdocs.

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Fidia-Georgetown

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for debt service and building operating costs that will become due pursuant to the Agreement."

Nelson Ford, Chief Financial Officer of the Georgetown University Medical Center, told SGR that the suit was filed "because it's prudent to protect the University's interests." The total cost of the building, he said, is $41 million, with Fidia responsible for half the debt service over the life of the building. Ford expressed hope, and appeared to have some confidence, that a solution acceptable to the University would be worked out. "Lots of drugs are under development at the Institute," he said, adding that "Costa is enthusiastic about prospects for the future. Costa believes there are great opportunities in the pipeline."—DSG

. . . Young Scientists' Network Reflects Disillusionment

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The Academy's response was embodied in a policy paper issued in June, *Science, Technology, and the Federal Government: National Goals for a New Era* [SGR, July 1: "US Science Can Have It All, Academy Report Asserts"]. Citing Vannevar Bush's design and the Cold War as the principal formative factors in the postwar development of American science policy, the Academy report stretches the time frame of change considerably in stating: "During recent decades, a series of political and technological revolutions have significantly changed the context in which science and technology policy is made in the United States."

With the Cold War motivations for science support gone, a new rationale is needed, the Academy report states. It proposes the adoption of agreed-upon national goals, such as industrial competitiveness, health, and national security, as new underpinnings for federal finance for research. In support of these goals, the US would aim to be among the world's leaders in all important fields of research, except those deemed so essential that "clear leadership" for the US would be the standard.

The Academy must be credited with rising above pessimism and proposing a scheme to propel research out of the financial doldrums by equating the prosperity of science with the well being of the nation. So far, however, there's been little response from the political community that was the target of the report. Summer and the battles of the Clinton program on Capitol Hill account for that. But it must be noted, too, that, except in self-congratulatory Academy circles, the report seems to have stirred little interest, even in the scientific community.

Perhaps the darkest manifestation of the new pessimism is the Young Scientists' Network, an electronic association founded in 1990 by a young PhD physicist, Kevin Aylesworth, who was justifiably worried about a job beyond his postdoctoral fellowship at the Naval Research Laboratory. Now working as a legal assistant in Cambridge, Mass., Aylesworth has seen the organization swell to some 3000 members, presumably attracted by the Network's statement of twin goals:

"To let the press, public, and government officials know that there is no shortage of scientists. Instead, the US is producing at least three new scientists and engineers for every position that is projected to open.

"To develop and find traditional and non-traditional employment for scientists in response to the realities of the scientific and engineering staff glut."

A statement by Aylesworth asserts, "One way private and public sector consumers of scientists and engineers have responded to the funding shortage is to develop a system that is dependent on 'Fresh young (and inexpensive) blood.' The young people are told about the 'Looming shortage' of scientists and engineers. This is 'The Myth,' " he states.

"Academicians are loath to admit that this problem exists," he says, "since it would endanger their supply of inexpensive labor. Many universities have become dependent on the overhead dollars derived from research grants to support other departments. Students work hard through grad school and then onto postdocs or industry," Aylesworth's statement continues. "They are valued by virtue of their low (or non-existent) salaries. After they graduate with a postdoc or two, or take one or more entry-level positions in industry, they become 'overqualified' and have to leave science and engineering."

Accustomed to cries of deprivation from all sectors, Congress has so far paid little attention to the conditions and issues that are spawning scientific pessimism—with the exception of Rep. George E. Brown Jr., Chairman of the House Science, Space, and Technology Committee. Brown feasts on the problems and potentials of science and technology [SGR, May 1: "Relishing Role, Rep. Brown is Mr. Science onCapitol Hill"]. Well aware that the traditional structures of scientific support are old and wobbling, Brown has not proposed a replacement, but he has done a good deal of looking around and thinking aloud.

Last year, he established, under his Committee, a Task Force on the Health of Research. In its report, issued in July 1992, Brown noted "a growing mismatch between the demands and the expectations of the research community (forged during the 1950s and the 1960s) and the goals of policymakers (which reflect current political, economic, and societal pressures)."

That observation dovetails with the Academy's proposal for science as an instrument for attaining national goals. But then Brown goes on to state:

"In attempting to rethink the fundamental nature of federal science policy, it must be recognized that the community of federally funded researchers shares many attributes with other interest groups that receive federal support: it resists change; it seeks additional resources as a cure for internal stress; it develops political (i.e., subjective and partisan) strategies to promote its agenda and demonstrate the need for special treatment; it unselfconsciously gives its own values primacy; and, in particular, it strives to show that it is an essential contributor to the national interest."

SGR went back to Edward David last week to ask for further thoughts about his dour remarks of last October. Citing the House vote to kill the Superconducting Super Collider, the shaky support for the Space Station, and the decline of the aerospace industry, David said, "If anything, I'm more convinced that we've got real problems."

He said there are manpower surpluses in virtually all fields of science and technology, with perhaps exceptions in the biomedical sciences. Unlike the defense economy "that we had for 50 years," David said, "the civilian economy is not technologically intensive."

He described himself as, and sounded, gloomier than ever about the future of the scientific enterprise.—DSG

Dingell Challenges Gallo's Claims in AIDS Patents

Rep. John D. Dingell is continuing his dogged pursuit of Robert C. Gallo, whom he depicts as a purloiner of the AIDS virus and the ensuing scientific glory, plus patent royalties, which have now amounted to some $700,000 for the renowned researcher at the National Institutes of Health.

In addition, the Congressman has expanded his cast of suspects in the Gallo affair, charging at an unusual hearing on July 21 that senior government officials "may have willfully ignored and, in some instances, actively suppressed" evidence that undermined Gallo's scientific claims and the US patent filings in 1984. Without stating names, he identified them as "Senior HHS officials, as well as HHS and [Department of Justice] attorneys."

In top fire-and-brimstone form, Dingell declared that his investigations of the AIDS patents "have encountered repeated instances of obfuscation and obstructionism on the part of past and current government officials." Alleging acts that could carry criminal penalties, he said, "Documents have been destroyed. Documents have been withheld for protracted periods. In several instances, key documents known to exist have never been produced from the official files."

These pronouncements were made at a brief open session preceding a five-hour closed hearing at which the sole witness, appearing under subpoena, was Lowell T. Harmison, a PhD who for two decades served as a senior adviser on patent policy at the Department of Health and Human Services (HHS). Now retired from HHS, Harmison was in that advisory role in 1984 when the Department proclaimed Gallo the discover of the AIDS virus and subsequently received patents for the HIV blood test and related developments.

Following protests from the Pasteur Institute, which had provided virus samples to Gallo, the French and American governments agreed in 1987 to share the scientific credit and the royalties. Gallo and two colleagues then on his research team, Mikulas Popovic and M.G. Sarangadharan, have each received $100,000 a year since 1986, with additional royalties going to NIH, Pasteur, and the French-American AIDS Foundation, jointly managed by French and American officials.

After repeatedly insisting that his laboratory had independently identified the AIDS virus, Gallo conceded two years ago that the cell cultures used in his lab may have been contaminated by an AIDS virus provided by Pasteur. Pasteur demanded renegotiation of the royalty-sharing agreement last year after an investigation of Gallo's AIDS research by the HHS Office of Research Integrity produced a major finding of scientific misconduct, plus various lower-level transgressions.

HHS in the Bush Administration was unresponsive to these demands. The current HHS Secretary, Donna Shalala, was reported in *Science* of July 2 as saying that she sees no reason to reopen the patent issue. The Pasteur Institute, however, continues to press for a bigger cut, if not all, of the royalties.

Now onto the scene comes Dingell, in harmony with Pasteur's depiction of itself as the victim of a long, continuing robbery and an ensuing coverup by the science establishment and its political chieftains and lawyers. The picture matches Dingell's low assessment of the ethical standards in the scientific community. As Chairman of the full Energy and Commerce Committee, with law-writing jurisdiction for Shalala's Department, Dingell is in a position to encourage the Secretary to reconsider her stance.

Represented by an HHS lawyer, Harmison appeared at the hearing under subpoena, because, as he explained to reporters, he "didn't want to be harassed by staffers"—a reference to staff members of Dingell's Oversight and Investigations Subcommittee who have been investigating the Gallo affair for nearly two years.

His refusal to meet with Dingell's staff led to the closed hearing—unusual outside of defense matters on Capitol Hill. Citing House rules that permit a closed session when testimony "may tend to defame, degrade, or incriminate any person," Dingell said that "the absence of a staff interview creates a great deal of uncertainty as to what information will be received today." But he granted Harmison's request to make a public statement before the hearing went into closed session.

Harmison said that HHS did not seek a patent for the AIDS virus because, at the start of the AIDS epidemic, there was a desperate need to stimulate research, and "if we had a patent, anyone wanting to use the virus would need government permission." On the other hand, he continued, the HIV cell line and blood test were patented "because we needed industry to do the job" of producing the tests, and industry requires profits. He scoffed at the idea that any wrongdoing had taken place. Following Harmison's statement, which took about 20 minutes, the hearing went into closed session.

The following day, Gallo underwent a daylong interview in the House Rayburn Building by Suzanne Hadley, a former misconduct investigator at NIH who has been assisting Dingell for the past two years.

Where is the Dingell probe going? There's always the possibility of a public hearing on Gallo, the government, and the HIV discovery and patents. But there's nothing at present on the Dingell schedule.

In the works, however, is a comprehensive report on the whole affair, said to be nearing completion. How Dingell will use this document is not known. But it could be the basis for a showy hearing, probably next fall at the earliest. Given the intense public interest in both AIDS and scientific misdeeds, a hearing would probably draw coveted TV coverage. Then, too, as he often has in the past, with telling results, Dingell could present his findings to the Justice Department with a strong recommendation for prosecution.

Still Undiscovered, "Gay Gene" Draws Rave Notice

With the "gay gene" providing the latest sighting, behavioral genes have become the laboratory version of the Loch Ness monster: reportedly glimpsed, fuzzily photographed, eternally elusive, but beyond proof that they aren't there.

The press went gaga about the latest sighting, contained in a report from the National Cancer Institute, published in *Science* of July 16, suggesting that somewhere in the vast chromosomal hinterlands lurks a gene that may just possibly provide a tilt, or more, toward homosexuality.

To alert the journalistic trade to what's on tap, *Science*, as do many other mainline research journals, sends out "embargoed" pre-publication copies, accompanied by summaries of major articles. In this case, the summary sheet was headed: "Homosexuality Linked to X Chromosome." In the journal itself, the research spawned two articles, one, in the Research News section, titled "Evidence for Homosexuality Gene," and in the Research Article section, the lab report, titled "A Link Between DNA Markers on the X Chromosome and Male Sexual Orientation."

The report made the front pages of the major dailies, the cover of *Time*, and was accorded precious time on network TV news—treatment suggestive of a major event in science, something akin to the dawn of Darwinian insight, the splitting of the atom, the discovery of the double helix.

Several of the press accounts were cautiously laced with comments from skeptical scientists, who noted that sightings or hints of genes for this or that behavior have frequently been reported, without corroboration or further consequences. Schizophrenia, alcoholism, and criminal behavior, plus others, have drawn the gene trackers and elicited sighting reports in the manner of the gay gene.

No matter. For a public bedazzled by the accomplishments and hallucinations of science—so many reports of breakthroughs, but so few cures—communiques from science are welcome fare, invariably conveying a sense of progress in a difficult world. In this relationship, the press and science tango smoothly.

Cynics contend that modernday scientists seek publicity because renown paves the way to grants. SGR has unsuccessfully sought firm evidence to support this suspicion. The grapevine suggests that celebrity could actually be a handicap inside the cauldron of peer review. But it is possible, in a strange turnabout, that some scientists believe that publicity conveys advantages. In any case, there is now no lack of public drumbeating about a professional literature, generally opaque to laymen, that formerly drew broad public attention only on the rare occasion of blockbuster findings.

The *Science* report, which does not employ the pop term "gay gene," is modest in its claims. Starting with 76 homosexual recruits, the researchers, headed by Dean H. Hamer, of the National Cancer Institute, found that 13 percent of the gay men's brothers were homosexual, whereas they estimated a frequency of 2 percent homosexuality in the general population. Examining DNA from 40 pairs of homosexual brothers, they found that 33 pairs shared a set of five markers. "Our experiments suggest," Hamer et al. reported, "that a locus (or loci) related to sexual orientation lies within approximately 4 million base pairs of DNA on the tip of the long arm of the X chromosome."

The Research News article notes that in seven sets of brothers, "there was no evidence of the [homosexual] trait passing through male family members," and goes on to state, in paraphrase, that Hamer says "it seems likely that homosexuality arises from a variety of causes, genetic and perhaps environmental as well."

The quest for the gay gene invites unpleasant questions about the prevalence of good sense in a scientific enterprise that has been given the sweet combination of taxpayers' money and operational independence.

When the leaders of science routinely douse Congress with sorrowful tales of promising, disease-fighting research going undone for lack of money, this line of research does invite wonder. This is especially so when NIH reports that its funds are sufficient for about only one out of four research proposals that are deemed meritorious.

Given the austere realities of contemporary medical-research economics, one cannot help wonder about the urgency of identifying the gay gene, if such exists. Gay activists are deluding themselves if they think that homophobia will wilt away if homosexuality is shown to be decreed by nature.

Suppose that the gene exists and is located. What next? We can be certain that a seminar circuit occupying many assorted experts will thrive on the innumerable ethical questions that can be raised or invented concerning sexual behavior and genetic destiny.

Will embryos be screened for homosexuality? Will job seekers be screened for sexual orientation? Will the health industry offer gene therapy for persons unhappy with their sexual orientation?

The authors of the *Science* report realized they are playing with social fire, for they stated in their article: "We believe that it would be fundamentally unethical to use such information to try to assess or alter a person's current or future orientation, either heterosexual or homosexual."

With rare exceptions, unfortunately, the history of science and technology shows that what can be done, will be done. The prospects of gene therapy and gene modification have been reported just around the corner for many years, and with the gobs of money now commanded by gene researchers, no doubt they will someday arrive.

Before this goes any further, the managers of science should be required to take time out from pleading poverty and provide an explanation of why scarce money and talent are pursuing a gay gene.

Unacceptable as an answer is that scientists must be permitted to do whatever they want to do.—DSG

More IN PRINT: R&D Directory, Space Plane, Etc.

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cial assistance from the West and help finance overall economic revitalization." Included are case studies of energy-assistance programs in Russia, Slovakia, and Bulgaria. Preparations for the report included a workshop with officials from the former Soviet Union and Easter European nations in Lithuania in October 1992.

Order from: New Orders, Superintendent of Documents, PO Box 37194, Pittsburgh, Pa. 15250-7954; tel. 202/783-3238; fax 202/512-2250. Add 25 percent for international orders.

Research Centers Directory: 1994 (in two volumes, 2574 pages, $455), 18th edition of the standard directory of university-based and other non-profit research entities in the US and Canada, with a total of nearly 13,000 listings in the physical, natural, medical, and social sciences, engineering and humanities. Each entry includes organizational title and affiliations, director's name, size of staff, fields of interest, publications, phone and fax numbers.

Order from: Gale Research, Inc., PO Box 33477, Detroit, Michigan 48232-5477; tel. 1/800-877-4253; fax 313/961-6083.

Science, Technology, and American Diplomacy: 1993 (680 pp., no charge), a leftover from the Bush Administration, this annual reporting chore, imposed on the White House by Congress in 1979, includes a compilation of all treaties, agreements, memos of understanding, contracts, etc., involving science, technology, and the environment between the US and scores of other nations and international bodies; also, brief discussions of the role of the State Department's Bureau of Oceans and International Environmental and Scientific Affairs, which prepared the report, plus reports on S&T assistance to former Soviet bloc countries, multi-national collaboration on big projects, and much more in the international realm. A foreword by House Chairmen George Brown, of the Science, Space, and Technology Committee, and Lee Hamilton, of the Foreign Affairs Committee, complains that "Currently, our international scientific and technological policy seems to be carried out in an ad-hoc fashion by a number of agencies, each with its own domestic mission, with little inter-agency coordination, and no unified vision." The criticism was directed at the Bush Administration. There are no signs of remedies under Clinton, but it's still early.

Order from: US House of Representatives, Science, Space, and Technology Committee, Ford House Office Building, Room 108, 3d and D Sts. SW, Washington, DC 20515; tel. 202/225-5079.

National Aero-Space Plane [NASP]: A Need for Program Direction and Funding Decisions (GAO/NSDIAD-93-207; 12 pp., no charge), from the General Accounting Office (GAO), a brief but revealing report on the National Aero-Space Plane, another Reagan-era mega-project, but ironically, in this case, one that has eluded wide notice. A joint Defense-NASA project, the program is aimed at developing a single-stage-to-orbit craft that can take off like a conventional aircraft, attain up to 25 times the speed of sound, attain low earth orbit, and return to runway. Since 1986, only $1.7 billion has been spent, but, the GAO report says, the project is now approaching requirements for big-spending on actual development—with the customary ballooning of cost estimates, from $3.1 billion in 1986 to $17 billion last year.

As is usually the case with misbegotten mega-projects, Administration officials, past and present, have responded to the political hazards of termination by keeping the project alive but financially undernourished. The NASP spending plan inherited by Clinton called for $240 million in the coming fiscal year, of which only about half was requested in the Administration's budget. GAO says the White House and Congress should "form a consensus on whether the nation will pursue this technology at the present time and whether it is willing to devote sufficient resources to achieve this goal."

Also from the GAO: ***Intellectual Property Rights: US Companies Patent Experiences in Japan*** (GAO/GGD-93-126; 96 pp., no charge), based on a survey of American 346 firms, GAO reports a high measure of dissatisfaction about long delays and assorted difficulties in obtaining patents in Japan.

The report notes that the differing national patent systems may account for much of the problem, and adds that the Japanese appear to be trying to accelerate the process.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/512-6000; fax 301/258-4066.

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IN Print: R&D Statistics, Health Reform, Computing

The publications listed are obtainable as indicated—not from SGR.

Main Science and Technology Indicators: 1993 (80 pp., $38 for the two issues published per year, plus $4 for shipping; also available on 5.25" and 3.5" diskettes, $120 for two issues; no shipping charge), from the Organization for Economic Cooperation and Development (OECD), the first in 1993 of its twice-yearly series of comparative statistics on R&D spending trends, patents, high-tech industrial performance, technological trade balances, education, etc. in the 24 OECD nations. The data, presented in 89 tables, generally extend into the early 1990s. For close observers of international R&D patterns, this one is a must.

OECD publications are available from OECD centers and booksellers in many major cities around the world. In the US: OECD Publications and Information Center, 2001 L St. NW, Suite 700, Washington, DC 20036-4910; tel. 202/785-6323; fax 202/785-0350.

Promoting High-Performance Computing and Communications (63 pp., no charge), from the Congressional Budget Office (CBO), an overview of the federal multi-agency High Performance Computing and Communications Program (HPCC), an outgrowth of existing programs that the Bush Administration orchestrated and budgeted for rapid annual expansion, from $600 million in fiscal 1992 to $1.2 billion in 1996. The report notes, "Although HPCC is often described as a computer network R&D program, 80 percent of the new funds are for R&D involving areas other than networks. Supercomputer hardware and software are to receive over two-thirds of the incremental funds, while network R&D will receive one-fifth of the new monies." With the Clinton Administration enthusiastic for the program, but still reviewing the details, the CBO report points out that the massive parallel computing systems heavily supported by HPCC face an uncertain commercial future; also, that "even though the field of data communications is growing rapidly, this growth will not necessarily translate into a demand for services providing the types of speed HPCC is designed to provide." The report was written by Philip Webre of CBO, under the supervision of Jan Paul Acton and Elliot Schwartz.

Also from the CBO: ***Trends in Health Spending: An Update*** (77 pp., no charge), a storehouse of statistical data, from 1960 to 1991, about the great American health industry, covering overall spending trends, incomes of health professionals, hospital costs, international comparisons, etc. The CBO, a persistent worrier about health-care spending, notes that "despite substantial declines in hospital admissions, inpatient days, and occupancy rates during the 1980s, total national spending for hospital services rose from $42.2 billion in 1961 (in 1991 dollars) to $288.6 billion in 1991—nearly a seven-fold increase." (Scoffers at these figures point out that hospital care, 1961 style and earlier, remains available in the former Soviet-bloc countries.) The CBO observes that American doctors are paid far better than their counterparts in Canada, Germany, and the UK, and that as a slice of the federal budget, health spending went from 7.1 percent in 1970 to 14.3 percent in 1991, and, if undeterred, is bound for 23.6 percent in 1998. The report, prepared by Julia C. Jacobsen, Kimberly D. Guise, and Kathryn M. Langwell, under the direction of Nancy Gordon, is a follow-up to *Trends in Health Expenditures by Medicare and the Nation*, issued by the CBO in 1991, one of a dozen previous reports in the CBO health series, all listed, many still available.

Order from: Congressional Budget Office, Publications, 2d and D Sts. NW, Washington, DC 20515; tel. 202/226-2809; fax 202/226-2714.

An Inconsistent Picture: A Compilation of Analyses of Economic Impacts of Competing Approaches to Health Care Reform by Experts and Stakeholders (GPO Stock No. 052-003-01327-4; 134 pp., $8), from the Congressional Office of Technology Assessment (OTA), a well-done, long-overdue critique of number slinging in the murky arena of health-reform forecasts—swarms of them currently winging around Washington. Cataloging the wildly disparate figures, OTA notes, for example, that "Estimates of the impact of Single Payer approaches on national health care spending and savings in a single year range from $21 billion in increased spending to $241 billion in savings in 1991."

For managed competition, the Clinton choice for health reform, the figures ranged from increases of $48 billion in 1993 to savings of $22 billion in 1994. Included are summaries of specific analyses and names of the individuals and organizations that made them. OTA points out that, regardless of the structure of the various health-care reform schemes, claims of "savings" rely on spending caps, price controls, absence of universal coverage, reductions in services, or assumptions of large savings from managed care or administrative simplification. The OTA report concludes with a 10-item "check list" designed to assist legislators in evaluating claims in the growing health-reform debate.

Another from OTA: ***Energy Efficiency Technologies for Central and Eastern Europe*** (GPO Stock No. 052-003-01321-5; 129 pp., $8.50), says energy efficiency in the former Communist countries is extremely low and that US efforts to rejuvenate their economies should focus advice and technical assistance in this area. "In a few years," the report states, "energy savings could far exceed direct finan-

(Continued on Page 7)

SGR Summer Schedule

The next issue of *Science & Government Report* will be published September 15, 1993.